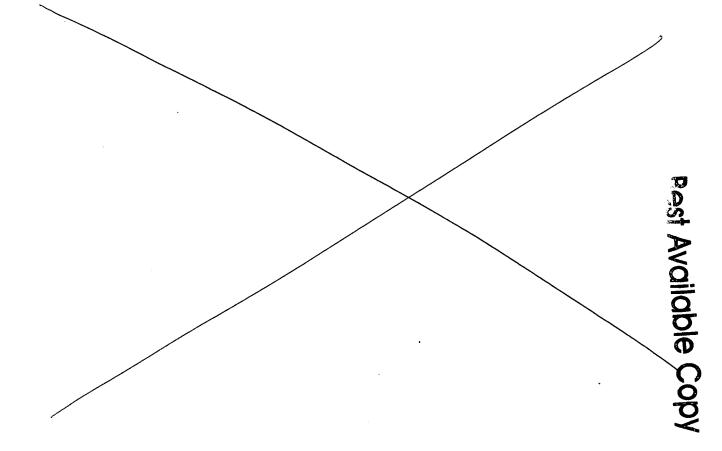
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Approved for use through 10/31/2002, OMB 651-0031
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Substitute for form 1449APTO	Complete if Known	required to respond to a collection of information unless It contains a valid CMRS control number
INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Uso as many shoots a migrossiny)	Application Number	10/634,274
	Filing Date	August 5, 2003
	First Named Inventor	Farrar, Paul
JAN 0 3 2005 🕄	Group Art Unit	2823
	Examiner Name	Kebede, Brook
Sheet 1 of 1	Attorney Docket No: 1303.110US1	

		US P	ATENT DOCUMENTS	
Examiner Initial *	USP Document Number	Publication Date	Name of Patentee or Applicant of cited Document	Filing Date If Appropriate
Bil	US-6,350,678	02/26/2002	Pramanick, S., et al.	03/23/2000
Bol	US-6,376,368	04/23/2002	Jung, S., et al.	08/01/2000

	FOREIGN PATENT DOCUMENTS				
Examiner Foreign Document No Publication Date Name of Patentee or Applicant of cited T <sup>2</sup>					

	OTHER DOCUMENTS NON PATENT LITERATURE DOCUMENTS					
Examiner Initials*	Cite No 1	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	Ţ			

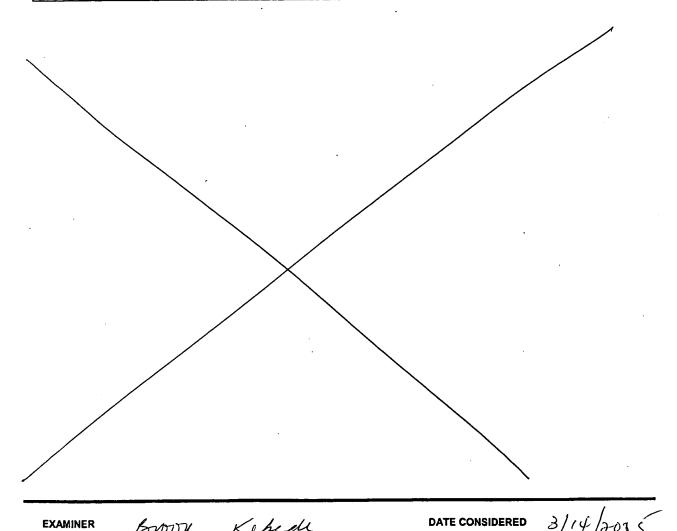


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Substitute for form 1449A/PTO	Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use as many sheets as necessary)	Application Number	10/634,274
	Filing Date	August 5, 2003
	First Named Inventor	Farrar, Paul
SP 10 2004	Group Art Unit	2823
	Examiner Name	Kebede, Brook
Sheet 1 of 1	Attorney Docket No: 1	303.110US1

US PATENT DOCUMENTS							
Examiner Initial *	USP Document Number	Publication Date	Name of Patentee or Applicant of cited Document	Class	Subclass	Filing Date If Appropriate	
BU	US-6,208,016	03/27/2001	Farrar, Paul	257	643	02/24/1999	
BU	US-6,288,442	09/11/2001	Farrar, Paul A.	257	678	09/10/1998	
BN	US-6,358,849	03/19/2002	Havemann, R. H., et al.	438	689	12/21/1999	
BU	US-6,552,432	04/22/2003	Farrar, Paul A.	257	751	08/30/2001	
BN	US-6,614,099	09/02/2003	Farrar, Paul A.	257	643	09/04/2001	
BU	US-6,743,716	06/01/2004	Farrar, Paul A.	438	652	07/16/2002	
BK	US-6,756,298	06/29/2004	Ahn, Kie Y., et al.	438_	635	08/01/2002	



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ı	First Named Inventor	Farrar, Paul
	Group Art Unit	2818 7823
	Examiner Name	Unknown- B. KEBEDE

US PATENT DOCUMENTS						
Examiner initial *	USP Document Number	Publication Date	Name of Patentee or Applicant of cited Document	Class	Subclass	Filing Date If Appropriate
Bu 3	001/0002333	05/31/2001	Huang, Chao-Yuan, et al.	438	637	03/29/1999
Bu	2002/0014646	02/07/2002	Tsu, Robert , et al.	257	296	07/30/2001
BIL	2002/0028552	03/07/2002	Lee, Ki-Young, et al.	438	243	09/03/1999
Box	2002/0096768	07/25/2002	Joshi, Rajiv V.	257	750	01/18/2002
BU	2002/0109233	08/15/2002	Farrar, Paul A.	257	762	04/05/2002
BU	US-2,842,438	07/08/1958	Saarivirta, M. J., et al.	75	153	08/02/1956
BU	US-3,954,570	06/04/1976	Shirk, Albert, et al.	204_	15	11/11/1974
Bu	US-4,386,116	05/31/1983	Nair, Krishna K., et al.	427	99	12/24/1981
BM	US-4,394,223	07/19/1983	Hall, Dean	204	15	10/06/1981
BU	US-4,423,547	01/03/1984	Farrar, P. A., et al.	29	571	06/01/1981
BU	US-4,565,157	01/21/1986	Brors, D. L., et al.	118	719	03/29/1983
BK	US-4,574,095	03/04/1986	Baum, Thomas H., et al.	427	53.1	11/19/1984
BU	US-4,762,728	08/09/1988	Keyser, T., et al.	427	38	11/26/1985
	US-4,788,082	11/29/1988	Schmitt, Jerome J.	427	248.1	12/12/1985
BU	US-4,847,111	07/11/1989	Chow, Yu C., et al.	427	38	06/30/1988
Bu	US-4,931,410	06/05/1990	Tokunaga, Takafumi , et al.	437	189	08/25/1988
BU	US-4,948,459	08/14/1990	Van Laarhoven, et al.	156	643	01/04/1989
BAL	US-4,962,058	10/09/1990	Cronin, John E., et al.	437	187	04/14/1989
BK	US-4,996,584	02/26/1991	Young, P. L., et al.	357	71	10/13/1988
BN	US-5,019,531	05/28/1991	Awaya, N., et al.	437	180	05/19/1989
BU	US-5,034,799	07/23/1991	Tomita, K., et al.	357	71	02/14/1990
BIL	US-5,084,412	01/28/1992	Nakasaki, Yasushi	437	189	10/01/1990
Boll	US-5,100,499	03/31/1992	Douglas, M. A.	156	635	06/25/1991
BR	US-5,130,274	07/14/1992	Harper, J. M., et al.	437	195	04/05/1991
BU	US-5,149,615	09/22/1992	Chakravorty, K. K., et al.	430	313	01/08/1991
BU	US-5,158,986	10/27/1992	Cha, S. W., et al.	521	82	04/05/1991
BN	US-5,173,442	12/22/1992	Carey, D. H.	437	173	03/24/1992
BIL	US-5,231,056	07/27/1993	Sandhu, G. S.	437	200	01/15/1992
BIL	US-5,240,878	08/31/1993	Fitzsimmons, J., et al.	437	187	04/26/1991
BU	US-5,243,222	09/07/1993	Harper, J. M., et al.	257	774	01/08/1992
BH	US-5,256,205	10/26/1993	Schmitt III, Jerome J., et al.	118	723	01/07/1992
BN	US-5,334,356	08/02/1994	Baldwin, D. F., et al.	422	133	08/24/1992
BN	US-5,354,712	10/11/1994	Ho, Y. Q., et al.	437	195	11/12/1992

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Attorney Docket No: 1	1000 4401104	
Examiner Name	Unknown B KEBEDE	
Group Art Unit	2818 J823	
First Named Inventor	August 5, 2003 Farrar, Paul	
Filing Date		
Application Number	10/634274	
Complete if Known		
	Application Number Filing Date First Named Inventor Group Art Unit Examiner Name	

BN	US-5,371,042	12/06/1994	Ong, E.	437	194	06/16/1992
BN	US-5,384,284	01/24/1995	Doan, T.T., et al.	437	190	10/01/1993
	US-5,413,687	05/09/1995	Barton, C. L., et al.	204	192.14	11/27/1991
BU	US-5,426,330	06/20/1995	Joshi, R. V., et al.	257	752	09/21/1993
B1	03-3,420,330		Hughes, Henry G.,	1		
BN	US-5,442,237	08/15/1995	et al.	257	759	02/04/1994
BU	US-5,447,887	09/05/1995	Filipiak, Stanley, et al.	437	200	04/01/1994
BU	US-5,461,243	10/24/1995	Ek, Bruce A., et al.	257	190	10/29/1993
BVI	US-5,470,789	11/28/1995	Misawa, N.	437	190	03/07/1995
BN	US-5,470,801	11/28/1995	Kapoor, Ashok K., et al.	437	238	06/28/1993
BU	US-5,476,817	12/19/1995	Numata, K.	437	195	05/31/1994
BN	US-5,495,667	03/05/1996	Farnworth, Warren M., et al.	29	843	11/07/1994
BN	US-5,506,449	04/09/1996	Nakano, Tadashi, et al.	257	758	03/23/1994
	US-5,529,956	06/25/1996	Morishita, Y.	437	195	09/28/1994
BN	US-5,538,922	07/23/1996	Cooper, K J., et al.	437	195	01/25/1995
	US-5,539,060	07/23/1996	Tsunogae, Y., et al.	525	338	10/13/1995
BN	US-5,595,937	01/21/1997	Mikagi, K.	437	192	04/12/1996
BU	US-5,609,721	03/11/1997	Tsukune, A, et al.	156	646.1	01/03/1995
Bu	US-5,625,232	04/29/1997	Numata, K., et al.	257	758	07/15/1994
BR	US-5,635,253	06/03/1997	Canaperi, Donald F., et al.	427	437	06/07/1995
BI	US-5.654,245	08/05/1997	Allen, Gregory L.	438	629	03/23/1993
BIL	US-5,662,788	09/02/1997	Sandhu, G., et al.	205	87	06/03/1996
BIL	US-5,670,420	09/23/1997	Choi, Kyeong K.	437	189	11/08/1995
1811	US-5,674,787	10/07/1997	Zhao, Bin, et al.	437	230	01/16/1996
BK	US-5,675,187	10/07/1997	Numata, K., et al.	257	758	05/16/1996
Br	US-5,679,608	10/21/1997	Cheung, Robin W., et al.	437	195	06/05/1995
BIL	US-5,681,441	10/28/1997	Svendsen, Leo G., et al.	205	114	12/22/1992
BN	US-5,695,810	12/09/1997	Dubin, Valery M., et al.	427	96	11/20/1996
Bu	US-5,719,089	02/17/1998	Cherng, Meng-Jaw, et al.	438	637	06/21/1996
BN	US-5,719,410	02/17/1998	Suehiro, Shintaro, et al.	257	<b>7</b> 7	12/16/1996
BU	US-5,739,579	04/14/1998	Chiang, Chien, et al.	257	635	09/10/1996
BN	US-5,763,953	06/09/1998	Iljima, T., et al.	257	762	01/18/1996
BN	US-5,780,358	07/14/1998	Zhou, M. S.	438	645	04/08/1996
181		07/28/1998	Bruni, M. D.	445	52	07/25/1995

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Substitute for form 1449A/PTO	Complete il Known			
INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use as many sheets as necessary)	Application Number	10/634274		
	Filing Date	August 5, 2003		
	First Named Inventor	Farrar, Paul		
	Group Art Unit	2818 2823		
	Examiner Name	Unknown B. KEBEDE		
Sheet 3 of 12	Attorney Docket No: 1	303.110US1		

Box	US-5,792,522	08/11/1998	Jin, S., et al.	427	575	09/18/1996
Box	US-5,801,098	09/01/1998	Fiordalice, R., et al.	438	653	09/03/1996
BIL	US-5,814,557	09/29/1998	Venkatraman, Ramnath, et al.	438	622	05/20/1996
BX	US-5,821,168	10/13/1998	Jain, Ajay	438	692	07/16/1997
BIL	US-5,824,599	10/20/1998	Schacham-Diamond, Yosef, et al.	438	678	01/16/1996
Box	US-5,858,877	01/12/1999	Dennison, C. H., et al.	438	700	01/21/1997
Bu	US-5,891,797	04/06/1999	Farrar, P. A.	438	619	10/20/1997
BU	US-5,891,804	04/06/1999	Havemann, R. H., et al.	438	674	04/14/1997
BU	US-5,893,752	04/13/1999	Zhang, J., et al.	438	687	12/22/1997
ви	US-5,895,740	04/20/1999	Chien, Rong-Wu, et al.	430	313	11/13/1996
Bu	US-5,897,370	04/27/1999	Joshi, R. V., et al.	438	632	10/28/1996
BN	US-5,907,772	05/25/1999	Iwasaki, Haruo	438	253	02/26/1997
BU	US-5,911,113	06/08/1999	Yao, G., et al.	438	649	03/18/1997
BIL	US-5,913,147	06/15/1999	Dubin, Valery, et al.	438	687	01/21/1997
BIL	US-5,925,930	07/20/1999	Farnworth, Warren M., et al.	257	737	05/21/1996
BU	US-5,930,669	07/27/1999	Uzoh, Cyprian	438	627	04/03/1997
BU	US-5,932,928	08/03/1999	Clampitt, D. A.	257	758	07/03/1997
BIL	US-5,933,758	08/03/1999	Jain, A.	438	687	05/12/1997
BU	US-5,940,733	08/17/1999	Beinglass, Israel, et al.	438	655	07/29/1997
BIL	US-5,948,467	09/07/1999	Nguyen, T., et al.	427	99	07/24/1998
Bu	US-5,962,923	10/05/1999	Xu, Z., et al.	257	774	08/07/1995
BN	US-5,968,333	10/19/1999	Nogami, T., et al.	205	184	04/07/1998
BU	US-5,969,422	10/19/1999	Ting, C., et al.	257	762	05/15/1997
BIL	US-5,972,179	10/26/1999	Chittipeddi, , et al.	204	192.17	09/30/1997
BU	US-5,972,804	10/26/1999	Tobin, Philip J., et al.	438	786	11/03/1997
Bol	US-5,976,710	11/02/1999	Sachdev, K. G., et al.	428	620	04/10/1997
BU	US-5,981,350	11/09/1999	Geusic, Joseph E., et al.	438	386	05/29/1998
BU	US-5,985,759	11/16/1999	Kim, E., et al.	438	653	02/24/1998
BU	US-5,989,623	11/23/1999	Chen, Liang-Yuh, et al.	427	97	08/19/1997
BU	US-5,994,777	11/30/1999	Farrar, P. A.	257	758	08/26/1998
Bil	US-6,001,730	12/14/1999	Farkas, J., et al.	438	627	10/20/1997
BU	US-6,008,117	12/28/1999	Hong, Qi-Zhong , et al.	438	629	03/19/1997
BU	US-6,015,465	01/18/2000	Kholodenko, A., et al.	118	719	04/08/1998
Bu	US-6,017,820	01/25/2000	Ting, C. H., et al.	438	689	07/17/1998

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Substitute for form 1449A/PTO	Under the Personal Residence Act of 1945, he persons are required to respond to a conscious of recommission times it constitutes a valid UNIX control number.  Complete if Known		
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	Filing Date	August 5, 2003	
	First Named Inventor	Farrar, Paul	
	Group Art Unit	2818 2823	
,	Examiner Name	Unknown B. KEBEDE	
Sheet 4 of 12	Attorney Docket No: 1303.110US1		

BIL	US-6,030,877	02/29/2000	Lee, C, et al.	438	381	10/06/1997
Box	US-6,037,248	03/14/2000	Ahn, Kie	438	619	06/13/1997
BN	US-6,054,172	04/25/2000	Robinson, K., et al.	427	97	02/25/1999
BN	US-6,065,424	05/23/2000	Shacham-Diamand, Y., et al.	118	696	12/18/1996
BU	US-6,069,068	05/30/2000	Rathore, H. S., et al.	438	628	10/08/1997
BU	US-6,071,810	06/06/2000	Wada, Junichi, et al.	438	635	12/23/1997
BU	US-6,077,792	06/20/2000	Farrar, Paul A.	438	780	07/14/1997
BU	US-6,100,193	08/08/2000	Suehiro, Shintaro, et al.	438	685	09/24/1997
BU	US-6,120,641	10/19/2000	Stevens, E. Henry , et al.	156	345.22	08/03/1998
BN	US-6,126,989	10/03/2000	Robinson, Karl, et al.	427	97	08/26/1998
BU	US-6,136,095	10/24/2000	Xu, Z., et al.	118	719	10/06/1997
BX	US-6,139,699	10/31/2000	Chiang, T., et al.	204	192.15	05/27/1997
BN	US-6,140,228	10/31/2000	Shan, E., et al.	438	653	11/13/1997
BK	US-6,140,234	10/31/2000	Uzoh, Cyprian, et al.	438	678	01/20/1998
BN	US-6,143,646	11/07/2000	Wetzel, J. T.	438	637	06/03/1997
BK	US-6,150,261	11/21/2000	Hsu, C., et al.	438	640	05/25/1999
BU	US-6,153,507	11/28/2000	Mikagi, K.	438	618	01/13/1998
BN	US-6,159,769	12/12/2000	Farnworth, Warren M., et al.	438	108	01/05/1999
Bu	US-6,168,704	01/02/2001	Brown, T. M., et al.	205	118	02/04/1999
BIL	US-6,171,661	01/09/2001	Zheng, B., et al.	427	535	02/25/1998
BN	US-6,177,350	01/23/2001	Sundarrajan, A., et al.	438	688	04/14/1998
BL	US-6,183,564	02/06/2001	Reynolds, G. J., et al.	118	719	11/12/1998
BK	US-6,187,656	02/01/2001	Lu, Jiong P., et al.	438	592	10/07/1998
BK	US-6,190,732	02/20/2001	Omstead, , et al.	118	729	
BN	US-6,197,688	03/06/2001	Simpson, Cindy R.	438	678	02/12/1998
BN	US-6,207,222	03/27/2001	Chen, Liang-Yuh , et al.	427	97	08/24/1999
BL	US-6,207,553	05/27/2001	Buynoski, M., et al.	438	622	01/26/1999
BIL	US-6,207,558	03/27/2001	Singhvi, Shri, et al.	438	648	10/01/1999
BIL	US-6,211,049	04/03/2001	Farrar, Paul A.	438	597	02/24/1999
BIL	US-6,211,073	04/03/2001	Ahn, K. Y.	438	653	02/27/1998
Bil	US-6,221,763	04/24/2001	Gilton, Terry L.	438	643	04/05/1999
BN	US-6,232,219	05/15/2001	Blalock, , et al.	438	637	05/20/1998
BN	US-6,249,056	06/19/2001	Kwon, Dong-chul, et al.	257	758	11/01/1999
BN	US-6,265,311	07/24/2001	Hautala, J J., et al.	438	680	04/27/1999
BIL	US-6,271,592	08/07/2001	Kim, E., et al.	257	751	08/06/1999
BIL	US-6,277,263	08/21/2001	Chen, Linlin	205	182	08/31/1999
BR	US-6,284,656	09/04/2001	Farrar, Paul A.	438	687	08/04/1998

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Substitute for form 1449A/PTO	Complete il Known		
INFORMATION DISCLOSURE STATEMENT BY APPLICANT	Application Number	10/634274	
Use as many sheets as necessary)	Filing Date	August 5, 2003	
,	First Named Inventor	Farrar, Paul	
	Group Art Unit	2818 2823	
	Examiner Name	Unknown B. KEBEDE	
Sheet 5 of 12	Attorney Docket No: 1	303.110US1	

BI	US-6,287,954	09/11/2001	Ashley, Leon, et al.	438	622	12/09/1999
BY	US-6,290,833	09/18/2001	Chen, Linlin	205	182	08/31/1999
7			Sandhu, Gurtej S.,	<del>                                     </del>		
BU	US-6,313,035	11/06/2001	et al.	438	681	05/31/1996
	US-6,323,553	11/01/2001	Hsu, Wei-Yung, et al.	257	751	11/01/2001
BN	US-6,326,303	12/04/2001	Robinson, Karl, et al.	438	678	02/11/2000
	US-6,342,448	01/29/2002	Lin, J., et al.	438	687	05/31/2000
BM	03-0,342,440	01/25/2002	Zhou, Mei-Sheng,	1		
BH	US-6,358,842	03/19/2002	et al.	438	633	08/07/2000
	US-6,359,328	03/01/2002	Dubin,	257	622	
BK			Krishnamoorthy,	<b>†</b>		000444000
BN	US-6,368,966	04/09/2002	Ahila , et al.	438	687	08/31/1999
BIL	US-6,372,622	04/16/2002	Tan, , et al.	438	612	10/26/1999
BU	US-6,376,370	04/23/2002	Farrar, Paul A.	438	678	01/18/2000
BU	US-6,383,920	05/07/2002	Wang, P., et al.	438	639	01/10/2001
JOK.			Kozlov, Alexander,			07/00/0000
BU	US-6,387,542	05/14/2002	et al.	428	673	07/06/2000
BIL	US-6,399,489	06/04/2002	M'Saad, H., et al.	438	680	11/01/1999
BU	US-6,403,481	06/11/2002	Matsuda, T., et al.	438	687	08/10/1999
BN	US-6,420,262	07/16/2002	Farrar, Paul A.	438	652	01/18/2000
BU	US-6,426,289	07/30/2002	Farrar, Paul A.	438	670	03/24/2000
			Ritzdorf, Thomas L.,	205	84	07/08/2000
BIL	US-6,428,673	08/06/2002	et al.	205	<u> </u>	
BIL	US-6,429,120	08/06/2002	Ahn, Kie Y., et al.	438	635	01/18/2000
		11/26/2002	Krishnamoorthy,	257	586	11/21/2001
BU	US-6,486,533	11/20/2002	Ahila, et al.	201	300	11/21/2001
	US-6,508,920	01/21/2003	Ritzdorf, Thomas L.,	204	194	08/31/1999
BK		j	et al.	1		
Boll	US-6,518,198	02/11/2003	Klein, Rita J.	438	758	08/31/2000
BN	US-6,565,729	05/20/2003	Chen, Linlin, et al.	205	82	12/07/2000
'.	US-6,573,182	06/03/2003	Sandhu, Gurtej S.,	438	674	09/24/2001
Bu			et al.			
BN	US-6,632,345	10/14/2003	Chen, Linlin	205	182	10/23/2000
BK	US-6,638,410	10/28/2003	Chen, Linlin, et al.	205	182	11/22/2002
	US-6,664,197	12/16/2003	Stevens, E. Henry,	438	754	11/01/2001
BI	03-0,004,197	12/10/2003	et al.	700	1.57	, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
	US-6,674,169	01/06/2004	Sandhu, Gurtej S.,	257	763	09/24/2001
BU	03-0,074,109	01/00/2004	et al.		<u> </u>	<u> </u>

FOREIGN PATENT DOCUMENTS						
Examiner Initials*	Foreign Document No	Publication Date	Name of Patentee or Applicant of cited Document	Class	Subclass	T²
bu	JP-05160826	03/20/1995	Miyamoto, Ikuo	H01L	21/320 5	

	_	, , ,	DATE CONSIDERED	21.1/	111
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	First Named Inventor	Farrar, Paul		
	Group Art Unit	2818 2823		
	Examiner Name	Unknown BILEBEDE		
	Attorney Docket No: 1303.110US1			
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FOREIGN PATENT DOCUMENTS							
Examiner Initials*	Foreign Document No	Publication Date	Name of Patentee or Applicant of cited Document	Class	Subclass	T²	
Box	JP-07-321111	08/12/1995	Tetsuo, K.	H01L	21/320 5		
Bol	JP-07078815	03/20/1995	Miyamoto, I.	HO1 L	21/320 5		
BU	JP-5-267643	10/15/1993	Muraoka, T.	H01L	029/46		

	OTHE	R DOCUMENTS NON PATENT LITERATURE DOCUMENTS	
Examiner Initials*	Cite No 1	include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T²
4 .	1	"Improved Metallurgy for Wiring Very Large Scale Integrated Circuits",	П
BU		International Technology Disclosures, 4, Abstract,(1986),1 page	
		ABE, K., et al., "Sub-half Micron Copper Interconnects Using Reflow of	$  \  $
BU		Sputtered Copper Films", <u>VLSI Multilevel Interconnection Conference</u> , (June 25-27, 1995),308-311	
		AMERICAN SOCIETY FOR METALS, "Metals Handbook", Properties and	
n .		Selection: Nonferrous Alloys and Pure Metals, Ninth Edition, Volume 2, Metals	1 \
Bil		Park, Ohio: American Society for Metals, (1989), 157, 395	
		AMERICAN SOCIETY FOR METALS, "Metals Handbook", Metals Park, Ohio :	
Bu		American Society for Metals, 8th Edition, Volume 8, (1973),300-302	
		ANDRICACOS, P. C., "Copper On-Chip Interconnections", The Electrochemical	$\Gamma T$
bu		Society Interface, (1999),32-37	
		ANONYMOUS, "Formation of Conductors at Variable Depths Using	
	1 1	Differential Photomask, Projecting Images into Insulator by Reactive Ion Etching,	1 1
1-1		Selectively Filling Images with Conductor*, Research Disclosure, Disclosure No.	1
Bol		RD 291015, Abstract,(July 10, 1988),1 page	
		BAE, SANGHOON, et al., "Low-Temperature Deposition Pathways to Silicon	
	lL	Nitride, Amorphous Silicon, Polycrystalline Silicon, and n type Amorphous Silicon	
R -1.	[	Films Using a High Density Plasma System*, IEEE Conference Records	1 1
BU		Abstracts, International Conference on Plasma Science, (1997),315	oxdot
		BAI, G., "Copper Interconnection Deposition Techniques and Integration", 1996	
BU		Symposium on VLSI Technology, Digest of Technical Papers,(1996),48-49	$\Box$
•		BERNIER, M., et al., "Laser processing of palladium for selective electroless	
BU		copper plating", SPIE, 2045, (1994),330-337	
•		BHANSALI, S., et al., "A novel technique for fabrication of metallic structures on	
/		polymide by selective electroless copper plating using ion implantation", Thin	
bu		Solid Films, 270, No. 1/02, (1995),489-492	$\sqcup \bot$
		BHANSALI, S., et al., "Selective electroless copper plating on silicon seeded by	
BU		copper ion implantation", Thin Solid Films, 253, (1994),391-394	$oxed{oxed}$
		BRAUD, F., "Ultra Thin Diffusion Barriers for Cu Interconnections at The	
BU	\	Gigabit Generation and Beyond", VMIC Conference Proceedings, (1996),174-	\
po		179	<u>L `</u>

EXAMINER	Broon U	Kebcell	DATE CONSIDERED	3/14/2005

PTO/SB/084(10-01)
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Substitute for form 1449A/PTO	Complete if Known		
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	Group Art Unit	2818	
	Examiner Name	Unknown	
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	OTHE	R DOCUMENTS NON PATENT LITERATURE DOCUMENTS	
Examiner Initials*	Cite No 1	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T
	1	CABRERA, A. L., et al., "Oxidation protection for a variety of transition metals	
10	\ .	and copper via surface silicides formed with silane containing atmospheres",	
BK	1	Journal of Materials Research, 6(1), (1991),71-79	<b>∐</b>
		CHAKRAVORTY, K. K., et al., "High-Density Interconnection Using	
	- 1	Photosensitive Polyimide and Electroplated Copper Conductor Lines", IEEE	
BR	1	Transactions on Components, Hybrids, and Manufacturing Technology, 13(1),	
18K		(March 1990),200-206	
		CRAIG, J. D., "Polymide Coatings", Packaging, Electronic Materials Handbook,	1 1
	(	Vol. 1, ASM International Handbook Committee (eds.), ASM International,	1 1
Bul		Materials Park, OH,(1989),767-772	
-		DE FELIPE, T. S., et al., "Electrical Stability and Microstructural Evolution in Thin	
	- 1	Films of High Conductivity Copper Alloys", Interconnect Technology, 1999, IEEE	
Bu		International Conference, (May 24-26, 1999),293-295	
1		DING, "Copper Barrier, Seed Layer and Planerization Technologies", VMIC	
Bu		Conference Proceedings, (1997),87-92	$\vdash \vdash$
		DUBIN, V. M., et al., "Selective and Blanket Electroless Copper Deposition for	
		Ultralarge Scale Integration", Journal of the Electrochemical Society, 144(3),	
BU	٠.	(1997),898-908	₩-
		DUSHMAN, S., et al., Scientific Foundations of Vacuum Technique, 2nd	
BU		Edition, John Wiley and Sons,(1962),1-806	
	ľ	EDELSTEIN, D., "Full Copper Wiring in a Sub-0.25 micrometer CMOS ULSI	1 1
Bu		Technology", Technical Digest., International Electron Devices Meeting,	
1510		(December 7-10, 1997),773-776	
l	1	EISENBRAUN, E. T., et al., "Selective and Blanket Low-Temperature Copper	1 ]
011	1	CVD for Multilevel Metallization in ULSI", Conference Proceedings ULSI-VII.	
BU		(1992),5 pages	$\vdash$
1	1	ELDRIDGE, J. M., "New Approaches for Investigating Corrosion in Thin Film	
ł	-	Devices", Electronic Packaging and Corrosion in Microelectronics, PRoceedings	
Bu	l	of ASM's Third Conference on Electric Packaging: Materials and Processes &	1
1000	_	Corrosion in Microelectronics, Mpls, MN,(1987),283-285	┼┼┼
111	1	ERNST, et al., "Growth Model for Metal Films on Oxide Surface: Cu on	
bu		ZnO(0001)-O**, Physical Review B, 47, (May 15, 1993),13782-13796	╆┼
	1	FUKUDA, T., et al., "0.5 -micrometer-Pitch Copper-Dual-Damascene	
,	1	Metallization Using Organic SOG (k=2.9) for 0.18-micrometer CMOS	
BR	1	Applications", Electron Devices Meeting, 1999. IEDM Technical Digest.	
101		International, (1999),619-622	++
		GLADLFELTER, W. L., et al., "Trimethylamine Complexes of Alane as	
011	}	Precursors for the Low-Pressure Chemical Vapor Deposition of Aluminum",	1 1
BU		Chemistry of Materials, 1, (1989),pp. 339-343	+-+
. 1	/	GODBEY, D. J., et al., "Copper Diffusion in Organic Polymer Resists and Inter-	$\perp$
BOU		level Dielectrics", Thin Solid Films, 308-309, (1997),pp. 470-474	<u> </u>

EXAMINER	Bono U	Kelede	DATE CONSIDERED	3/14/0	2005
	101000				

PTC/SB/08A(10.01)
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Sheet 8 of 12	Attorney Docket No: 1303.110US1			

OTHER DOCUMENTS NON PATENT LITERATURE DOCUMENTS				
Examiner Initials*	Cite No 1	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	r 	
Bol	ľ	GRIMBLOT, J., et al., "II. Oxidation of Aluminum Films", <u>J. Electrochem., 129,</u> (1982),pp. 2369-2372		
		HATTANGADY, S. V., et al., "Integrated processing of silicon oxynitride films by combined plasma and rapid-thermal processing", J. Vac. Sci. Technol. A, 14(6).	1	
BN		(1996),pp. 3017-3023	1	
BU		HIRAO, S., et al., "A Novel Copper Reflow Process Using Dual Wetting Layers", 1997 Symposium on VLSI Technology, Digest of Technical Papers, (1997),57-58		
,		HIRATA, A., et al., "WSiN Diffusion Barrier Formed by ECR Plasma Nitridation for Copper Damascene Interconnection", 16th Solid State Devices and Materials,		
BU		(1998),pp. 260-261		
Br		HOLLOWAY, KAREN, et al., "Tantalum as a diffusion barrier between copper and silicon", Applied Physics Letters, 57(17), (October 1990),1736-1738		
bx		HU, C. K., et al., "Extendibility of Cu Damascene to 0.1 micrometer Wide Interconnections", Mat. Res. Soc. Symp. Proc, 514, (1998),pp. 287-292		
		HYMES, S., et al., "Passivation of Copper by Silicide Formation in Dilute		
BK		Silane", Conference Proceedings ULSI-VII, (1992),425-431  IIJIMA, T., "Microstructure and Electrical Properties of Amorphous W-Si-N		
BU		Barrier Layer for Cu Interconnections", 1996 VMIC Conference, (1996),168-173		
BU		IZAKI, M., et al., "Characterization of Transparent Zinc Oxide Films Prepared by Electrochemical Reaction", <u>Journal of the Electrochemical Society</u> , 144, (June 1997),1949-1952		
PIC		JAYARAJ, K., "Low Dielectric Constant Microcellular Foams", Proceedings		
BU		from the Seventh Meeting of the DuPont Symposium on Polymides in Microelectrics, (September 1996),474-501		
BU		JEON, Y., et al., "Low-Temperature Fabrication of Polycrystalline Silicon Thin Films by ECR Pecvd", <u>The Electrochemical Society Proceedings</u> , 94(35), (1995),103-114		
BU		JIN, C., et al., "Porous Xerogel Films as Ultra-low Permittivity Dielectrics for ULSI Interconnect Applications", Conference Proceedings ULSI XII - 1997 Materials Research Society, (1997),463-469		
BU		KALOYEROS, A. E., et al., "Blanket and Selective Copper CVD from Cu(FOD)2 for Multilivel Metallization", Mat. Res. Soc. Symp. Proc., Vol. 181,(1990),6 pages		
BN		KAMINS, T. I., "Structure and Properties of LPCVD Silicon Films", <u>J.</u> <u>Electrochem, Soc.: Solid-State Science and Technology, 127,</u> (March 1980),pp. 686-690		
BN	,	KANG, H. K., et al., "Grain Structure and Electromigration Properties of CVD CU Metallization", Proceedings of the 10th International VLSI Multilevel Interconnection Conference, (June 8-9, 1993),223-229		
BU		KEPPNER, H., et al., "The "Micromorph" Cell: A New Way to High-Efficiency-Low-Temperature Crystalline Silicon Thin-Film Cell Manufacturing", Mat. Res. Soc. Symp. Proc., 452, (1997),pp. 865-876		

EXAMINER	Brown	Kehede	DATE CONSIDERED	3/14/20	رَد ِ

PTO/SB/08A(10.01)
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Cite   Include name of the author (in CAPITAL LETTERS), sile of the article (when appropriate), sile of the time   It	OTHER DOCUMENTS NON PATENT LITERATURE DOCUMENTS				
electroless copper plating on Si02", Applied Physics Letters, 60(22), (June 1, 1992),2767-2769  KIRK, RAYMOND E., Kirk-Othmer Concise Encyclopedia of Chemical Technology, Grayson, M., (ed.), John Wiley & Sons, Inc., New York, NY,(1985),433-435, 926-938  KISTIAKOWSKY, G. B., et al., "Reactions of Nitrogen Atoms. I. Oxygen and Oxides of Nitrogen", The Journal of Chemical Physics, 27(5), (1957),pp. 1141-1149  KLAUS, J W., et al., "Atomic Layer Deposition of Tungsten Nitride Films Using Sequential Surface Reactions", Journal of the Electrochemical Society, vol.147, no.3, (March 2000),1175-1181  LAURSEN, T., "Encapsulation of Copper by Nitridation of Cu-Ti Alloy/Bilayer Structures", International Conference on Metallurgical Coatings and Thin Films, Abstract No. H1.03, San Diego, CA,(April 1997),309  LEN, V., et al., "An investigation into the performance of diffusion barrier materials against copper diffusion using metal-oxide-semiconductor (MOS) capacitor structures", Solid-State Electronics, 43, (1999),pp. 1045-1049  LYMAN, T., et al., "Metallography, Structures and Phase Diagrams", Metals Handbook, 8, American Society for Metals, Metals Park, Ohio,(1989),pg. 300 & 302  MARCADAL, C., "OMCVD Copper Process for Dual Damascene Metallization", VMIC Conference, ISMIC,(1997),93-97  MILLER, R. D., "Low Dielectric Constant Polyimides and Polyimide Nanofoams", Seventh Meeting of the DuPont Symposium on Polymides in Microelectronics, (September 1996),pp. 443-473  MIN, JAE-SIK, et al., "Metal-Organic Atomic-Layer Deposition of Titanium-Silicon-Nitride Films", Applied Physics Letters, 75(11), (September 13, 1999), 1521-1523  MURARKA, S. P., et al., "Copper Interconnection Schemes: Elimination of The Need of Diffusion Barrier/Adhesion Promoter by the Use of Corrosion Resistant, Low Resistivity Doped Copper", SPIE, 2335, (1994),pp. 80-90  NAKAO, S., et al., "Thin and Low-Resistivity Tantalum Nitride Diffusion Barrier and Giant-Grain Copper Interconnected U.SI Metallization", Japanese Journal of Applied Physics, 38(4B), (April 1			publisher, city and/or country where published.	Τ'	
Handbook, 8, American Society for Metals, Metals Park, Ohio, (1989), pp. 1045-1049  LYMAN, T., et al., "Metallography, Structures and Phase Diagrams", Metals Handbook, 8, American Society for Metals, Metals Park, Ohio, (1987), pp. 390  MARCADAL, C., "OMCVD Copper Process for Dual Damascene Metallization", VMIC Conference, (SMIC, (1997), 93-97  MILLER, R. D., "Low Dielectric Constant Polyimides and Polyimide Nanofoams", Seyenth Meeting of the DuPont Symposium on Polymides in Miroyales Files. (1997), 1239-1241  MIN, JAE-SIK, et al., "Atomic Hydrogen Enhanced Reflow of Copper", Applied Physics Letters, 70(10), (1997), 1239-1241  MINARCA, S. P., et al., "Atomic Hydrogen Enhanced Reflow of Copper", Applied Physics Letters, 70(10), (1997), 1239-1241  MINARCA, S. P., et al., "Thin and Low-Resistivity Tantalum Nitride Diffusion Barrier and Giant-Granic Opper Process for Advanced Using Minarch Resistivity Doped Copper", SPIE, 2335, (1994), pp. 80-90  NAKAO, S., et al., "Thin and Low-Resistivity Tantalum Nitride Diffusion Barrier and Giant-Granic Opper Interconnects for Advanced ULSI Metalization", Japanese Journal of Applied Physics, 38(4B), (April 1999), pp. 80-90  NAYAK, D.K., "High performance GeSI quantum-well PMOS on SIMOX", International Electron Devices Meeting 1992, Technical Digest, (1992), 777-80  International Electron Devices Meeting 1992, Technical Digest, (1992), 777-80		,	KIANG, M., et al., "Pd/Si plasma immersion ion implantation for selective		
KIRK, RAYMOND E., Kirk-Othmer Concise Encyclopedia of Chemical Technology, Grayson, M., (ed.), John Wiley & Sons, Inc., New York, NY, (1985), 433-435, 926-938  KISTIAKOWSKY, G. B., et al., "Reactions of Nitrogen Atoms. I. Oxygen and Oxides of Nitrogen", The Journal of Chemical Physics, 27(5), (1957),pp. 1141-1149  KLAUS, J.W., et al., "Atomic Layer Deposition of Tungsten Nitride Films Using Sequential Surface Reactions", Journal of the Electrochemical Society, vol.147, no.3, (March 2000),1175-1181  LAURSEN, T., "Encapsulation of Copper by Nitridation of Cu-Ti Alloy/Bilayer Structures", International Conference on Metallurgical Coatings and Thin Films, Abstract No. H1.03, San Diego, CA.(April 1997),309  LEN, V., et al., "An investigation into the performance of diffusion barrier materials against copper diffusion using metal-oxide-semiconductor (MOS) capacitor structures", Solid-State Electronics, 43, (1999),pp. 1045-1049  LYMAN, T., et al., "Metallography, Structures and Phase Diagrams", Metals Handbook, 8, American Society for Metals, Metals Park, Ohio,(1989),pgs. 300 & 302  MARCADAL, C., "OMCVD Copper Process for Dual Damascene Metallization", VMIC Conference, ISMIC.(1997),93-97  MILLER, R. D., "Low Dielectric Constant Polyimides and Polyimide Nanofoams", Seventh Meeting of the DuPont Symposium on Polymides in Microelectronics, (September 1996),pp. 443-473  MIN, JAE-SIK, et al., "Metal-Organic Atomic-Layer Deposition of Titanium-Silicon-Nitride Films", Applied Physics Letters, 75(11), (September 13, 1999), 1521-1523  MIYAKE, T., et al., "Atomic Hydrogen Enhanced Reflow of Copper", Applied Physics Letters, 70(10), (1997), 1239-1241  MURARKA, S. P., et al., "Copper Interconnection Schemes: Elimination of The Need of Diffusion Barrier/Adhesion Promoter by the Use of Corrosion Resistant, Low Resistivity Doped Copper", SPIE, 2335, (1994),pp. 80-90  NAKAO, S., et al., "Thin and Low-Resistivity Tantalum Nitride Diffusion Barrier and Giant-Grain Copper Interconnects for Advanced ULSI Metallization", Japanese Journal				H	
Technology, Grayson, M., (ed.), John Wiley & Sons, Inc., New York, NY, (1995),433-435, 926-938  KISTIAKOWSKY, G. B., et al., "Reactions of Nitrogen Atoms. I. Oxygen and Oxides of Nitrogen", The Journal of Chemical Physics, 27(5), (1957),pp. 1141-1149  KLAUS, J.W., et al., "Atomic Layer Deposition of Tungsten Nitride Films Using Sequential Surface Reactions", Journal of the Electrochemical Society, vol.147, no.3, (March 2000),1175-1181  LAURSEN, T., "Encapsulation of Copper by Nitridation of Cu-Ti Alloy/Bilayer Structures", International Conference on Metallurgical Coatings and Thin Films, Abstract No. H1.03, San Diego, CA,(April 1997),309  LEN, V., et al., "An investigation into the performance of diffusion barrier materials against copper diffusion using metal-oxide-semiconductor (MOS) capacitor structures", Solid-State Electronics, 43, (1999),pp. 1045-1049  LYMAN, T., et al., "Metallography, Structures and Phase Diagrams", Metals Handbook, 8, American Society for Metals, Metals Park, Ohio,(1989),pgs. 300 & 302  MARCADAL, C., "OMCVD Copper Process for Dual Damascene Metallization", VMIC Conference, ISMIC,(1997),93-97  MILLER, R. D., "Low Dielectric Constant Polyimides and Polyimide Nanofoams", Seventh Meeting of the DuPont Symposium on Polymides in Microelectronics, (September 1996),pp. 443-473  MIN, JAE-SIK, et al., "Metal-Organic Atomic-Layer Deposition of Titanium-Silicon-Nitride Films", Applied Physics Letters, 75(11), (September 13, 1999), 1521-1523  MIYAKE, T., et al., "Atomic Hydrogen Enhanced Reflow of Copper", Applied Physics Letters, 70(10), (1997), 1239-1241  MURARKA, S. P., et al., "Copper Interconnection Schemes: Elimination of The Need of Diffusion Barrier/Adhesion Promoter by the Use of Corrosion Resistant, Low Resistivity Doped Copper", SPIE, 2335, (1994),pp. 80-90  NAXAO, S., et al., "Thin and Low-Resistivity Tantalum Nitride Diffusion Barrier and Giant-Grain Copper Interconnects for Advanced ULSI Metallization", Japanese Journal of Applied Physics, 38(4B), (April 1999),pps. 262-263  NAYAK, D.	BU			<del>                                     </del>	
NY.(1985),433-435, 926-938  KISTIAKOWSKY, G. B., et al., "Reactions of Nitrogen Atoms. I. Oxygen and Oxides of Nitrogen", The Journal of Chemical Physics, 27(5), (1957),pp. 1141-1149  KLAUS, J.W., et al., "Atomic Layer Deposition of Tungsten Nitride Films Using Sequential Surface Reactions", Journal of the Electrochemical Society, vol.147, no.3, (March 2000),1175-1181  LAURSEN, T., "Encapsulation of Copper by Nitridation of Cu-Ti Alloy/Bilayer Structures", International Conference on Metallurgical Coatings and Thin Films. Abstract No. H1.03, San Diego, CA.(April 1997),309  LEN, V., et al., "An investigation into the performance of diffusion barrier materials against copper diffusion using metal-oxide-semiconductor (MOS) capacitor structures", Solid-State Electronics, 43, (1999),pp. 1045-1049  LYMAN, T., et al., "Metallography, Structures and Phase Diagrams", Metals Handbook, 8, American Society for Metals, Metals Park, Ohio,(1989),pgs. 300 & 302  MARCADAL, C., "OMCVD Copper Process for Dual Damascene Metallization", VMIC Conference, ISMIC.(1997),93-97  MILLER, R. D., "Low Dielectric Constant Polyimides and Polyimide Nanofoams", Seventh Meeting of the DuPont Symposium on Polymides in Microelectronics, (September 1996),pp. 443-473  MIN, JAE-SIK, et al., "Metal-Organic Atomic-Layer Deposition of Titanium-Silicon-Nitride Films", Applied Physics Letters, 75(11), (September 13, 1999), 1521-1523  MIYAKE, T., et al., "Atomic Hydrogen Enhanced Reflow of Copper", Applied Physics Letters, 70(10), (1997),1239-1241  MURARKA, S. P., et al., "Copper Interconnection Schemes: Elimination of The Need of Diffusion Barrier/Adhesion Promoter by the Use of Corrosion Resistant, Low Resistivity Doped Copper", SPIE, 2335, (1994),pp. 80-90  NAKAO, S., et al., "Thin and Low-Resistivity Tantalum Nitride Diffusion Barrier and Giant-Grain Copper Interconnects for Advanced ULSI Metallization", Japanese Journal of Applied Physics, 38(4B), (April 1999),pgs. 262-263  NAYAK, D.K., "High performance GeSi quantum-well PMOS on SIMOX", International			KIRK, RAYMOND E., Kirk-Othmer Concise Encyclopedia of Chemical	11	
KISTIAKOWSKY, G. B., et al., "Reactions of Nitrogen Atoms. I. Oxygen and Oxides of Nitrogen", The Journal of Chemical Physics, 27(5), (1957),pp. 1141-1149  KLAUS, J W., et al., "Atomic Layer Deposition of Tungsten Nitride Films Using Sequential Surface Reactions", Journal of the Electrochemical Society, vol.147, no.3, (March 2000),1175-1181  LAURSEN, T., "Encapsulation of Copper by Nitridation of Cu-Ti Alloy/Bilayer Structures", International Conference on Metallurgical Coatings and Thin Films, Abstract No. H1.03, San Diego, CA,(April 1997),309  LEN, V., et al., "An investigation into the performance of diffusion barrier materials against copper diffusion using metal-oxide-semiconductor (MOS) capacitor structures", Solid-State Electronics, 43, (1999),pp. 1045-1049  LYMAN, T., et al., "Metallography, Structures and Phase Diagrams", Metals Handbook, 8, American Society for Metals, Metals Park, Ohio,(1989),pgs. 300 & 302  MARCADAL, C., "OMCVD Copper Process for Dual Damascene Metallization", VMIC Conference, ISMIC.(1997),93-97  MILLER, R. D., "Low Dielectric Constant Polyimides and Polyimide Nanofoams", Seventh Meeting of the DuPont Symposium on Polymides in Microelectronics, (September 1996),pp. 443-473  MIN, JAE-SIK, et al., "Metal-Organic Atomic-Layer Deposition of Titanium-Silicon-Nitride Films", Applied Physics Letters, 75(11), (September 13, 1999),1521-1523  MYAKE, T., et al., "Atomic Hydrogen Enhanced Reflow of Copper", Applied Physics Letters, 70(10), (1997),1239-1241  MURARKA, S. P., et al., "Copper Interconnection Schemes: Elimination of The Need of Diffusion Barrier/Adhesion Promoter by the Use of Corrosion Resistant, Low Resistivity Doped Copper", SPIE, 2335, (1994),pp. 80-90  NAKAO, S., et al., "Thin and Low-Resistivity Tantalum Nitride Diffusion Barrier and Giant-Grain Copper Interconnects for Advanced ULSI Metallization", Japanese Journal of Applied Physics, 38(4B), (April 1999),pgs. 262-263  NAYAK, D.K., "High performance Gest quantum-well PMOS on SIMOX", International Electron Devices Meeting 1992					
Oxides of Nitrogen", The Journal of Chemical Physics, 27(5), (1957),pp. 1141-1149  KLAUS, JW., et al., "Atomic Layer Deposition of Tungsten Nitride Films Using Sequential Surface Reactions", Journal of the Electrochemical Society, vol.147, no.3, (March 2000),1175-1181  LAURSEN, T., "Encapsulation of Copper by Nitridation of Cu-Ti Alloy/Bilayer Structures", International Conference on Metallurgical Coatings and Thin Films, Abstract No. H1.03, San Diego, CA,(April 1997),309  LEN, V., et al., "An investigation into the performance of diffusion barrier materials against copper diffusion using metal-oxide-semiconductor (MOS) capacitor structures", Solid-State Electronics, 43, (1999),pp. 1045-1049  LYMAN, T., et al., "Metallography, Structures and Phase Diagrams", Metals Handbook, 8, American Society for Metals, Metals Park, Ohio,(1989),pgs. 300 & 302  MARCADAL, C., "OMCVD Copper Process for Dual Damascene Metallization", VMIC Conference, ISMIC,(1997),93-97  MILLER, R. D., "Low Dielectric Constant Polyimides and Polyimide Nanofoams", Seventh Meeting of the DuPont Symposium on Polymides in Microelectronics, (September 1996),pp. 443-473  MIN, JAE-SIK, et al., "Metal-Organic Atomic-Layer Deposition of Titanium-Silicon-Nitride Films", Applied Physics Letters, 75(11), (September 13, 1999),1521-1523  MIYAKE, T., et al., "Atomic Hydrogen Enhanced Reflow of Copper", Applied Physics Letters, 70(10), (1997),1239-1241  MURARKA, S. P., et al., "Copper Interconnection Schemes: Elimination of The Need of Diffusion Barrier/Adhesion Promoter by the Use of Corrosion Resistant, Low Resistivity Doped Copper", SPIE, 2335, (1994),pp. 80-90  NAKAO, S., et al., "Thin and Low-Resistivity Tantalum Nitride Diffusion Barrier and Giant-Grain Copper Interconnects for Advanced ULSI Metallization", Japanese Journal of Applied Physics, 38(49), (April 1999),pgs. 262-263  NAYAK, D.K., "High performance GeSI quantum-well PMOS on SIMOX", International Electron Devices Meeting 1992, Technical Digest, (1992),777-80	BU		NY,(1985),433-435, 926-938	Н.	
KLAUS, J W., et al., "Atomic Layer Deposition of Tungsten Nitride Films Using Sequential Surface Reactions", Journal of the Electrochemical Society, vol.147, no.3, (March 2000),1175-1181  LAURSEN, T., "Encapsulation of Copper by Nitridation of Cu-Ti Alloy/Bilayer Structures", International Conference on Metallurgical Coatings and Thin Films, Abstract No. H1.03, San Diego, CA,(April 1997),309  LEN, V., et al., "An investigation into the performance of diffusion barrier materials against copper diffusion using metal-oxide-semiconductor (MOS) capacitor structures", Solid-State Electronics, 43, (1999),pp. 1045-1049  LYMAN, T., et al., "Metallography, Structures and Phase Diagrams", Metals Handbook, 8, American Society for Metals, Metals Park, Ohio,(1989),pgs. 300 & 302  MARCADAL, C., "OMCVD Copper Process for Dual Damascene Metallization", VMIC Conference, ISMIC.(1997),93-97  MILLER, R. D., "Low Dielectric Constant Polyimides and Polyimide Nanofoams", Seventh Meeting of the DuPont Symposium on Polymides in Microelectronics, (September 1996),pp. 443-473  MIN, JAE-SIK, et al., "Metal-Organic Atomic-Layer Deposition of Titanium-Silicon-Nitride Films", Applied Physics Letters, 75(11), (September 13, 1999), 1521-1523  MIYAKE, T., et al., "Atomic Hydrogen Enhanced Reflow of Copper", Applied Physics Letters, 70(10), (1997), 1239-1241  MURARKA, S. P., et al., "Copper Interconnection Schemes: Elimination of The Need of Diffusion Barrier/Adhesion Promoter by the Use of Corrosion Resistant, Low Resistivity Doped Copper", SPIE, 2335, (1994),pp. 80-90  NAKAO, S., et al., "Thin and Low-Resistivity Tantalum Nitride Diffusion Barrier and Giant-Grain Copper Interconnects for Advanced ULSI Metallization", Japanese Journal of Applied Physics, 38(4B), (April 1999),pgs. 262-263  NAYAK, D.K., "High performance GeSI quantum-well PMOS on SIMOX", International Electron Devices Meeting 1992. Technical Digest, (1992),777-80			KISTIAKOWSKY, G. B., et al., "Reactions of Nitrogen Atoms. I. Oxygen and		
KLAUS, J W., et al., "Atomic Layer Deposition of Tungsten Nitride Films Using Sequential Surface Reactions", Journal of the Electrochemical Society, vol.147, no.3, (March 2000),1175-1181  LAURSEN, T., "Encapsulation of Copper by Nitridation of Cu-Ti Alloy/Bilayer Structures", International Conference on Metallurgical Coatings and Thin Films, Abstract No. H1.03, San Diego, CA,(April 1997),309  LEN, V., et al., "An investigation into the performance of diffusion barrier materials against copper diffusion using metal-oxide-semiconductor (MOS) capacitor structures", Solid-State Electronics, 43, (1999),pp. 1045-1049  LYMAN, T., et al., "Metallography, Structures and Phase Diagrams", Metals Handbook, 8, American Society for Metals, Metals Park, Ohio,(1989),pgs. 300 & 302  MARCADAL, C., "OMCVD Copper Process for Dual Damascene Metallization", VMIC Conference, ISMIC,(1997),93-97  MILLER, R. D., "Low Dielectric Constant Polyimides and Polyimide Nanofoams", Seventh Meeting of the DuPont Symposium on Polymides in Microelectronics, (September 1996),pp. 443-473  MIN, JAE-SIK, et al., "Metal-Organic Atomic-Layer Deposition of Titanium-Silicon-Nitride Films", Applied Physics Letters, 75(11), (September 13, 1999),1521-1523  MIYAKE, T., et al., "Atomic Hydrogen Enhanced Reflow of Copper", Applied Physics Letters, 70(10), (1997),1239-1241  MURARKA, S. P., et al., "Copper Interconnection Schemes: Elimination of The Need of Diffusion Barrier/Adhesion Promoter by the Use of Corrosion Resistant, Low Resistivity Doped Copper", SPIE, 2335, (1994),pp. 80-90  NAKAO, S., et al., "Thin and Low-Resistivity Tantalum Nitride Diffusion Barrier and Giant-Grain Copper Interconnects for Advanced ULSI Metallization", Japanese Journal of Applied Physics, 38(4B), (April 1999),pgs. 262-263  NAYAK, D.K., "High performance GeSI quantum-well PMOS on SIMOX", International Electron Devices Meeting 1992. Technical Digest, (1992),777-80		1 1	Oxides of Nitrogen", The Journal of Chemical Physics, 27(5), (1957),pp. 1141-	11	
Sequential Surface Reactions", Journal of the Electrochemical Society, vol.147, no.3, (March 2000),1175-1181  LAURSEN, T., "Encapsulation of Copper by Nitridation of Cu-Ti Alloy/Bilayer Structures", International Conference on Metallurgical Coatings and Thin Films, Abstract No. H1.03, San Diego, CA,(April 1997),309  LEN, V., et al., "An investigation into the performance of diffusion barrier materials against copper diffusion using metal-oxide-semiconductor (MCS) capacitor structures", Solid-State Electronics, 43, (1999),pp. 1045-1049  LYMAN, T., et al., "Metallography, Structures and Phase Diagrams", Metals Handbook, 8, American Society for Metals, Metals Park, Ohio,(1989),pgs. 300 & 302  MARCADAL, C., "OMCVD Copper Process for Dual Damascene Metallization", VMIC Conference, ISMIC,(1997),93-97  MILLER, R. D., "Low Dielectric Constant Polyimides and Polyimide Nanofoams", Seventh Meeting of the DuPont Symposium on Polymides in Microelectronics, (September 1996),pp. 443-473  MIN, JAE-SIK, et al., "Metal-Organic Atomic-Layer Deposition of Titanium-Siicon-Nitride Films", Applied Physics Letters, 75(11), (September 13, 1999),1521-1523  MIYAKE, T., et al., "Atomic Hydrogen Enhanced Reflow of Copper", Applied Physics Letters, 70(10), (1997),1239-1241  MURARKA, S. P., et al., "Copper Interconnection Schemes: Elimination of The Need of Diffusion Barrier/Adhesion Promoter by the Use of Corrosion Resistant, Low Resistivity Doped Copper", SPIE, 2335, (1994),pp. 80-90  NAKAO, S., et al., "Thin and Low-Resistivity Tantalum Nitride Diffusion Barrier and Giant-Grain Copper Interconnects for Advanced ULSI Metallization", Japanese Journal of Applied Physics, 38(4B), (April 1999),pgs. 262-263  NAYAK, D.K., "High performance GeSI quantum-well PMOS on SIMOX", International Electron Devices Meeting 1992, Technical Digest, (1992),777-80	BU	<u> </u>		Ш.	
December 1996   Process for Dual Damascene Metallization",   MILLER, R. D., "Low Dielectric Constant Polyimides and Polyimide Nanofoams", Seventh Meeting of the DuPont Symposium on Polymides in Microelectronics, (September 1996),pp. 443-473   MIN, JAE-SIK, et al., "Motallography Silicon-Nitride Films", Applied Physics Letters, 75(11), (September 13, 1999), 1521-1523   MIYAKE, T., et al., "Atomic Hydrogen Enhanced Reflow of Corposion Resistant, Low Resistivity Doped Copper", SPIE, 2335, (1994),pp. 80-90   NAKAO, S., et al., "Thin and Low-Resistivity Tantalum Nitride Diffusion Barrier and Giant-Grain Copper Interconnects for Advanced ULSI Metallization", Japanese Journal of Applied Physics, 38(4B), (April 1999),pp. 262-265, (1992),777-80   NAYAK, D.K., "High performance GeSi quantum-well PMOS on SIMOX", International Electron Devices Meeting 1992, Technical Digest, (1992),777-80			KLAUS, J W., et al., "Atomic Layer Deposition of Tungsten Nitride Films Using	11	
LAURSEN, T., "Encapsulation of Copper by Nitridation of Cu-Ti Alloy/Bilayer Structures", International Conference on Metallurgical Coatings and Thin Films, Abstract No. H1.03, San Diego, CA,(April 1997),309  LEN, V., et al., "An investigation into the performance of diffusion barrier materials against copper diffusion using metal-oxide-semiconductor (MOS) capacitor structures", Solid-State Electronics, 43, (1999),pp. 1045-1049  LYMAN, T., et al., "Metallography, Structures and Phase Diagrams", Metals Handbook, 8, American Society for Metals, Metals Park, Ohio,(1989),pgs. 300 & 302  MARCADAL, C., "OMCVD Copper Process for Dual Damascene Metallization", VMIC Conference, ISMIC,(1997),93-97  MILLER, R. D., "Low Dielectric Constant Polyimides and Polyimide Nanofoams", Seventh Meeting of the DuPont Symposium on Polymides in Microelectronics, (September 1996),pp. 443-473  MIN, JAE-SIK, et al., "Metal-Organic Atomic-Layer Deposition of Titanium-Silicon-Nitride Films", Applied Physics Letters, 75(11), (September 13, 1999),1521-1523  MYAKE, T., et al., "Atomic Hydrogen Enhanced Reflow of Copper", Applied Physics Letters, 70(10), (1997),1239-1241  MURARKA, S. P., et al., "Copper Interconnection Schemes: Elimination of The Need of Diffusion Barrier/Adhesion Promoter by the Use of Corrosion Resistant, Low Resistivity Doped Copper", SPIE, 2335, (1994),pp. 80-90  NAKAO, S., et al., "Thin and Low-Resistivity Tantalum Nitride Diffusion Barrier and Giant-Grain Copper Interconnects for Advanced ULSI Metallization", Japanese Journal of Applied Physics, 38(4B), (April 1999),pps. 262-263  NAYAK, D.K., "High performance GeSI quantum-well PMOS on SIMOX", International Electron Devices Meeting 1992, Technical Digest, (1992),777-80	n.	-		11	
Structures", International Conference on Metallurgical Coatings and Thin Films, Abstract No. H1.03, San Diego, CA,(April 1997),309  LEN, V., et al., "An investigation into the performance of diffusion barrier materials against copper diffusion using metal-oxide-semiconductor (MOS) capacitor structures", Solid-State Electronics, 43, (1999),pp. 1045-1049  LYMAN, T., et al., "Metallography, Structures and Phase Diagrams", Metals Handbook, 8, American Society for Metals, Metals Park, Ohio,(1989),pgs. 300 & 302  MARCADAL, C., "OMCVD Copper Process for Dual Damascene Metallization", VMIC Conference, ISMIC,(1997),93-97  MILLER, R. D., "Low Dielectric Constant Polyimides and Polyimide Nanofoams", Seventh Meeting of the DuPont Symposium on Polymides in Microelectronics, (September 1996),pp. 443-473  MIN, JAE-SIK, et al., "Metal-Organic Atomic-Layer Deposition of Titanium-Silicon-Nitride Films", Applied Physics Letters, 75(11), (September 13, 1999),1521-1523  MIYAKE, T., et al., "Atomic Hydrogen Enhanced Reflow of Copper", Applied Physics Letters, 70(10), (1997),1239-1241  MURARKA, S. P., et al., "Copper Interconnection Schemes: Elimination of The Need of Diffusion Barrier/Adhesion Promoter by the Use of Corrosion Resistant, Low Resistivity Doped Copper", SPIE, 2335, (1994),pp. 80-90  NAKAO, S., et al., "Thin and Low-Resistivity Tantalum Nitride Diffusion Barrier and Giant-Grain Copper Interconnects for Advanced ULSI Metallization", Japanese Journal of Applied Physics, 38(4B), (April 1999),pgs. 262-263  NAYAK, D.K., "High performance GeSi quantum-well PMOS on SIMOX", International Electron Devices Meeting 1992. Technical Digest, (1992),777-80	BU	L	<u>no.3,</u> (March 2000),1175-1181	Ц.	
Abstract No. H1.03, San Diego, CA,(April 1997),309  LEN, V., et al., "An investigation into the performance of diffusion barrier materials against copper diffusion using metal-oxide-semiconductor (MOS) capacitor structures", Solid-State Electronics, 43, (1999),pp. 1045-1049  LYMAN, T., et al., "Metallography, Structures and Phase Diagrams", Metals Handbook, 8, American Society for Metals, Metals Park, Ohio,(1989),pgs. 300 & 302  MARCADAL, C., "OMCVD Copper Process for Dual Damascene Metallization", VMIC Conference, ISMIC,(1997),93-97  MILLER, R. D., "Low Dielectric Constant Polyimides and Polyimide Nanofoams", Seventh Meeting of the DuPont Symposium on Polymides in Microelectronics, (September 1996),pp. 443-473  MIN, JAE-SIK, et al., "Metal-Organic Atomic-Layer Deposition of Titanium-Silicon-Nitride Films", Applied Physics Letters, 75(11), (September 13, 1999),1521-1523  MIYAKE, T., et al., "Atomic Hydrogen Enhanced Reflow of Copper", Applied Physics Letters, 70(10), (1997),1239-1241  MURARKA, S. P., et al., "Copper Interconnection Schemes: Elimination of The Need of Diffusion Barrier/Adhesion Promoter by the Use of Corrosion Resistant, Low Resistivity Doped Copper", SPIE, 2335, (1994),pp. 80-90  NAKAO, S., et al., "Thin and Low-Resistivity Tantalum Nitride Diffusion Barrier and Giant-Grain Copper Interconnects for Advanced ULSI Metallization", Japanese Journal of Applied Physics, 38(4B), (April 1999),pps. 262-263  NAYAK, D.K., "High performance GeSi quantum-well PMOS on SIMOX", International Electron Devices Meeting 1992, Technical Digest, (1992),777-80			LAURSEN, T., "Encapsulation of Copper by Nitridation of Cu-Ti Alloy/Bilayer		
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materials against copper diffusion using metal-oxide-semiconductor (MOS) capacitor structures", Solid-State Electronics, 43, (1999),pp. 1045-1049  LYMAN, T., et al., "Metallography, Structures and Phase Diagrams", Metals Handbook, 8, American Society for Metals, Metals Park, Ohio,(1989),pgs. 300 & 302  MARCADAL, C., "OMCVD Copper Process for Dual Damascene Metallization", VMIC Conference, ISMIC,(1997),93-97  MILLER, R. D., "Low Dielectric Constant Polyimides and Polyimide Nanofoams", Seventh Meeting of the DuPont Symposium on Polymides in Microelectronics, (September 1996),pp. 443-473  MIN, JAE-SIK, et al., "Metal-Organic Atomic-Layer Deposition of Titanium-Silicon-Nitride Films", Applied Physics Letters, 75(11), (September 13, 1999),1521-1523  MIYAKE, T., et al., "Atomic Hydrogen Enhanced Reflow of Copper", Applied Physics Letters, 70(10), (1997),1239-1241  MURARKA, S. P., et al., "Copper Interconnection Schemes: Elimination of The Need of Diffusion Barrier/Adhesion Promoter by the Use of Corrosion Resistant, Low Resistivity Doped Copper", SPIE, 2335, (1994),pp. 80-90  NAKAO, S., et al., "Thin and Low-Resistivity Tantalum Nitride Diffusion Barrier and Giant-Grain Copper Interconnects for Advanced ULSI Metallization", Japanese Journal of Applied Physics, 38(4B), (April 1999),pgs. 262-263  NAYAK, D.K., "High performance GeSi quantum-well PMOS on SIMOX", International Electron Devices Meeting 1992, Technical Digest, (1992),777-80	18U		Abstract No. H1.03, San Diego, CA,(April 1997),309		
Lyman, T., et al., "Metallography, Structures and Phase Diagrams", Metals Handbook, 8, American Society for Metals, Metals Park, Ohio,(1989),pgs. 300 & 302  MARCADAL, C., "OMCVD Copper Process for Dual Damascene Metallization", VMIC Conference, ISMIC.(1997),93-97  MILLER, R. D., "Low Dielectric Constant Polyimides and Polyimide Nanofoams", Seventh Meeting of the DuPont Symposium on Polymides in Microelectronics, (September 1996),pp. 443-473  MIN, JAE-SIK, et al., "Metal-Organic Atomic-Layer Deposition of Titanium-Silicon-Nitride Films", Applied Physics Letters, 75(11), (September 13, 1999),1521-1523  MYAKE, T., et al., "Atomic Hydrogen Enhanced Reflow of Copper", Applied Physics Letters, 70(10), (1997),1239-1241  MURARKA, S. P., et al., "Copper Interconnection Schemes: Elimination of The Need of Diffusion Barrier/Adhesion Promoter by the Use of Corrosion Resistant, Low Resistivity Doped Copper", SPIE, 2335, (1994),pp. 80-90  NAKAO, S., et al., "Thin and Low-Resistivity Tantalum Nitride Diffusion Barrier and Giant-Grain Copper Interconnects for Advanced ULSI Metallization", Japanese Journal of Applied Physics, 38(48), (April 1999),pgs. 262-263  NAYAK, D.K., "High performance GeSI quantum-well PMOS on SIMOX", International Electron Devices Meeting 1992, Technical Digest, (1992),777-80			LEN, V., et al., "An investigation into the performance of diffusion barrier		
LYMAN, T., et al., "Metallography, Structures and Phase Diagrams", Metals Handbook, 8, American Society for Metals, Metals Park, Ohio,(1989),pgs. 300 & 302  MARCADAL, C., "OMCVD Copper Process for Dual Damascene Metallization", VMIC Conference, ISMIC.(1997),93-97  MILLER, R. D., "Low Dielectric Constant Polyimides and Polyimide Nanofoams", Seventh Meeting of the DuPont Symposium on Polymides in Microelectronics, (September 1996),pp. 443-473  MIN, JAE-SIK, et al., "Metal-Organic Atomic-Layer Deposition of Titanium-Silicon-Nitride Films", Applied Physics Letters, 75(11), (September 13, 1999),1521-1523  MIYAKE, T., et al., "Atomic Hydrogen Enhanced Reflow of Copper", Applied Physics Letters, 70(10), (1997),1239-1241  MURARKA, S. P., et al., "Copper Interconnection Schemes: Elimination of The Need of Diffusion Barrier/Adhesion Promoter by the Use of Corrosion Resistant, Low Resistivity Doped Copper", SPIE, 2335, (1994),pp. 80-90  NAKAO, S., et al., "Thin and Low-Resistivity Tantalum Nitride Diffusion Barrier and Giant-Grain Copper Interconnects for Advanced ULSI Metallization", Japanese Journal of Applied Physics, 38(4B), (April 1999),pgs. 262-263  NAYAK, D.K., "High performance GeSi quantum-well PMOS on SIMOX", International Electron Devices Meeting 1992. Technical Digest, (1992),777-80	44 .		materials against copper diffusion using metal-oxide-semiconductor (MOS)		
Handbook, 8, American Society for Metals, Metals Park, Ohio,(1989),pgs. 300 & 302  MARCADAL, C., "OMCVD Copper Process for Dual Damascene Metallization", VMIC Conference, ISMIC,(1997),93-97  MILLER, R. D., "Low Dielectric Constant Polyimides and Polyimide Nanofoams", Seventh Meeting of the DuPont Symposium on Polymides in Microelectronics, (September 1996),pp. 443-473  MIN, JAE-SIK, et al., "Metal-Organic Atomic-Layer Deposition of Titanium-Silicon-Nitride Films", Applied Physics Letters, 75(11), (September 13, 1999),1521-1523  MIYAKE, T., et al., "Atomic Hydrogen Enhanced Reflow of Copper", Applied Physics Letters, 70(10), (1997),1239-1241  MURARKA, S. P., et al., "Copper Interconnection Schemes: Elimination of The Need of Diffusion Barrier/Adhesion Promoter by the Use of Corrosion Resistant, Low Resistivity Doped Copper", SPIE, 2335, (1994),pp. 80-90  NAKAO, S., et al., "Thin and Low-Resistivity Tantalum Nitride Diffusion Barrier and Giant-Grain Copper Interconnects for Advanced ULSI Metallization", Japanese Journal of Applied Physics, 38(4B), (April 1999),pgs. 262-263  NAYAK, D.K., "High performance GeSI quantum-well PMOS on SIMOX", International Electron Devices Meeting 1992. Technical Digest, (1992),777-80	BU		capacitor structures", Solid-State Electronics, 43, (1999),pp. 1045-1049		
MARCADAL, C., "OMCVD Copper Process for Dual Damascene Metallization", VMIC Conference, ISMIC,(1997),93-97  MILLER, R. D., "Low Dielectric Constant Polyimides and Polyimide Nanofoams", Seventh Meeting of the DuPont Symposium on Polymides in Microelectronics, (September 1996),pp. 443-473  MIN, JAE-SIK, et al., "Metal-Organic Atomic-Layer Deposition of Titanium-Silicon-Nitride Films", Applied Physics Letters, 75(11), (September 13, 1999),1521-1523  MIYAKE, T., et al., "Atomic Hydrogen Enhanced Reflow of Copper", Applied Physics Letters, 70(10), (1997),1239-1241  MURARKA, S. P., et al., "Copper Interconnection Schemes: Elimination of The Need of Diffusion Barrier/Adhesion Promoter by the Use of Corrosion Resistant, Low Resistivity Doped Copper", SPIE, 2335, (1994),pp. 80-90  NAKAO, S., et al., "Thin and Low-Resistivity Tantalum Nitride Diffusion Barrier and Giant-Grain Copper Interconnects for Advanced ULSI Metallization", Japanese Journal of Applied Physics, 38(4B), (April 1999),pgs. 262-263  NAYAK, D.K., "High performance GeSI quantum-well PMOS on SIMOX", International Electron Devices Meeting 1992. Technical Digest, (1992),777-80			LYMAN, T., et al., "Metallography, Structures and Phase Diagrams", Metals		
MARCADAL, C., "OMCVD Copper Process for Dual Damascene Metallization", VMIC Conference, ISMIC,(1997),93-97  MILLER, R. D., "Low Dielectric Constant Polyimides and Polyimide Nanofoams", Seventh Meeting of the DuPont Symposium on Polymides in Microelectronics, (September 1996),pp. 443-473  MIN, JAE-SIK, et al., "Metal-Organic Atomic-Layer Deposition of Titanium-Silicon-Nitride Films", Applied Physics Letters, 75(11), (September 13, 1999),1521-1523  MIYAKE, T., et al., "Atomic Hydrogen Enhanced Reflow of Copper", Applied Physics Letters, 70(10), (1997),1239-1241  MURARKA, S. P., et al., "Copper Interconnection Schemes: Elimination of The Need of Diffusion Barrier/Adhesion Promoter by the Use of Corrosion Resistant, Low Resistivity Doped Copper", SPIE, 2335, (1994),pp. 80-90  NAKAO, S., et al., "Thin and Low-Resistivity Tantalum Nitride Diffusion Barrier and Giant-Grain Copper Interconnects for Advanced ULSI Metallization", Japanese Journal of Applied Physics, 38(4B), (April 1999),pgs. 262-263  NAYAK, D.K., "High performance GeSi quantum-well PMOS on SIMOX", International Electron Devices Meeting 1992. Technical Digest, (1992),777-80	14	l (.	Handbook, 8, American Society for Metals, Metals Park, Ohio,(1989),pgs. 300 &		
WILLER, R. D., "Low Dielectric Constant Polyimides and Polyimide Nanofoams", Seventh Meeting of the DuPont Symposium on Polymides in Microelectronics, (September 1996),pp. 443-473  MIN, JAE-SIK, et al., "Metal-Organic Atomic-Layer Deposition of Titanium-Silicon-Nitride Films", Applied Physics Letters, 75(11), (September 13, 1999),1521-1523  MIYAKE, T., et al., "Atomic Hydrogen Enhanced Reflow of Copper", Applied Physics Letters, 70(10), (1997),1239-1241  MURARKA, S. P., et al., "Copper Interconnection Schemes: Elimination of The Need of Diffusion Barrier/Adhesion Promoter by the Use of Corrosion Resistant, Low Resistivity Doped Copper", SPIE, 2335, (1994),pp. 80-90  NAKAO, S., et al., "Thin and Low-Resistivity Tantalum Nitride Diffusion Barrier and Giant-Grain Copper Interconnects for Advanced ULSI Metallization", Japanese Journal of Applied Physics, 38(4B), (April 1999),pgs. 262-263  NAYAK, D.K., "High performance GeSi quantum-well PMOS on SIMOX", International Electron Devices Meeting 1992, Technical Digest, (1992),777-80	BU			1-1-	
MILLER, R. D., "Low Dielectric Constant Polyimides and Polyimide Nanofoams", Seventh Meeting of the DuPont Symposium on Polymides in Microelectronics, (September 1996),pp. 443-473  MIN, JAE-SIK, et al., "Metal-Organic Atomic-Layer Deposition of Titanium-Silicon-Nitride Films", Applied Physics Letters, 75(11), (September 13, 1999),1521-1523  MIYAKE, T., et al., "Atomic Hydrogen Enhanced Reflow of Copper", Applied Physics Letters, 70(10), (1997),1239-1241  MURARKA, S. P., et al., "Copper Interconnection Schemes: Elimination of The Need of Diffusion Barrier/Adhesion Promoter by the Use of Corrosion Resistant, Low Resistivity Doped Copper", SPIE, 2335, (1994),pp. 80-90  NAKAO, S., et al., "Thin and Low-Resistivity Tantalum Nitride Diffusion Barrier and Giant-Grain Copper Interconnects for Advanced ULSI Metallization", Japanese Journal of Applied Physics, 38(4B), (April 1999),pgs. 262-263  NAYAK, D.K., "High performance GeSi quantum-well PMOS on SIMOX", International Electron Devices Meeting 1992. Technical Digest, (1992),777-80					
MILLER, R. D., "Low Dielectric Constant Polyimides and Polyimide Nanofoams", Seventh Meeting of the DuPont Symposium on Polymides in Microelectronics, (September 1996),pp. 443-473  MIN, JAE-SIK, et al., "Metal-Organic Atomic-Layer Deposition of Titanium-Silicon-Nitride Films", Applied Physics Letters, 75(11), (September 13, 1999),1521-1523  MIYAKE, T., et al., "Atomic Hydrogen Enhanced Reflow of Copper", Applied Physics Letters, 70(10), (1997),1239-1241  MURARKA, S. P., et al., "Copper Interconnection Schemes: Elimination of The Need of Diffusion Barrier/Adhesion Promoter by the Use of Corrosion Resistant, Low Resistivity Doped Copper", SPIE, 2335, (1994),pp. 80-90  NAKAO, S., et al., "Thin and Low-Resistivity Tantalum Nitride Diffusion Barrier and Giant-Grain Copper Interconnects for Advanced ULSI Metallization", Japanese Journal of Applied Physics, 38(4B), (April 1999),pgs. 262-263  NAYAK, D.K., "High performance GeSi quantum-well PMOS on SIMOX", International Electron Devices Meeting 1992. Technical Digest, (1992),777-80	BU		VMIC Conference, ISMIC,(1997),93-97	1 1	
Min, Jae-sik, et al., "Metal-Organic Atomic-Layer Deposition of Titanium-Silicon-Nitride Films", Applied Physics Letters, 75(11), (September 13, 1999),1521-1523  Miyake, T., et al., "Atomic Hydrogen Enhanced Reflow of Copper", Applied Physics Letters, 70(10), (1997),1239-1241  Murarka, S. P., et al., "Copper Interconnection Schemes: Elimination of The Need of Diffusion Barrier/Adhesion Promoter by the Use of Corrosion Resistant, Low Resistivity Doped Copper", SPIE, 2335, (1994),pp. 80-90  Nakao, S., et al., "Thin and Low-Resistivity Tantalum Nitride Diffusion Barrier and Giant-Grain Copper Interconnects for Advanced ULSI Metallization", Japanese Journal of Applied Physics, 38(4B), (April 1999),pgs. 262-263  Nayak, D.K., "High performance GeSi quantum-well PMOS on SIMOX", International Electron Devices Meeting 1992. Technical Digest, (1992),777-80			MILLER, R. D., "Low Dielectric Constant Polyimides and Polyimide	1 \	
MIN, JAE-SIK, et al., "Metal-Organic Atomic-Layer Deposition of Titanium-Silicon-Nitride Films", Applied Physics Letters, 75(11), (September 13, 1999),1521-1523  MIYAKE, T., et al., "Atomic Hydrogen Enhanced Reflow of Copper", Applied Physics Letters, 70(10), (1997),1239-1241  MURARKA, S. P., et al., "Copper Interconnection Schemes: Elimination of The Need of Diffusion Barrier/Adhesion Promoter by the Use of Corrosion Resistant, Low Resistivity Doped Copper", SPIE, 2335, (1994),pp. 80-90  NAKAO, S., et al., "Thin and Low-Resistivity Tantalum Nitride Diffusion Barrier and Giant-Grain Copper Interconnects for Advanced ULSI Metallization", Japanese Journal of Applied Physics, 38(4B), (April 1999),pgs. 262-263  NAYAK, D.K., "High performance GeSi quantum-well PMOS on SIMOX", International Electron Devices Meeting 1992. Technical Digest, (1992),777-80	Dal		Nanofoams", Seventh Meeting of the DuPont Symposium on Polymides in	1 1	
Silicon-Nitride Films", Applied Physics Letters, 75(11), (September 13, 1999), 1521-1523  MIYAKE, T., et al., "Atomic Hydrogen Enhanced Reflow of Copper", Applied Physics Letters, 70(10), (1997), 1239-1241  MURARKA, S. P., et al., "Copper Interconnection Schemes: Elimination of The Need of Diffusion Barrier/Adhesion Promoter by the Use of Corrosion Resistant, Low Resistivity Doped Copper", SPIE, 2335, (1994), pp. 80-90  NAKAO, S., et al., "Thin and Low-Resistivity Tantalum Nitride Diffusion Barrier and Giant-Grain Copper Interconnects for Advanced ULSI Metallization", Japanese Journal of Applied Physics, 38(4B), (April 1999),pgs. 262-263  NAYAK, D.K., "High performance GeSi quantum-well PMOS on SIMOX", International Electron Devices Meeting 1992. Technical Digest, (1992),777-80	BU		Microelectronics, (September 1996),pp. 443-473		
MYAKE, T., et al., "Atomic Hydrogen Enhanced Reflow of Copper", Applied Physics Letters, 70(10), (1997),1239-1241  MURARKA, S. P., et al., "Copper Interconnection Schemes: Elimination of The Need of Diffusion Barrier/Adhesion Promoter by the Use of Corrosion Resistant, Low Resistivity Doped Copper", SPIE, 2335, (1994),pp. 80-90  NAKAO, S., et al., "Thin and Low-Resistivity Tantalum Nitride Diffusion Barrier and Giant-Grain Copper Interconnects for Advanced ULSI Metallization", Japanese Journal of Applied Physics, 38(4B), (April 1999),pgs. 262-263  NAYAK, D.K., "High performance GeSi quantum-well PMOS on SIMOX", International Electron Devices Meeting 1992. Technical Digest, (1992),777-80			MIN, JAE-SIK, et al., "Metal-Organic Atomic-Layer Deposition of Titanium-		
MIYAKE, T., et al., "Atomic Hydrogen Enhanced Reflow of Copper", Applied Physics Letters, 70(10), (1997),1239-1241  MURARKA, S. P., et al., "Copper Interconnection Schemes: Elimination of The Need of Diffusion Barrier/Adhesion Promoter by the Use of Corrosion Resistant, Low Resistivity Doped Copper", SPIE, 2335, (1994),pp. 80-90  NAKAO, S., et al., "Thin and Low-Resistivity Tantalum Nitride Diffusion Barrier and Giant-Grain Copper Interconnects for Advanced ULSI Metallization", Japanese Journal of Applied Physics, 38(4B), (April 1999),pgs. 262-263  NAYAK, D.K., "High performance GeSi quantum-well PMOS on SIMOX", International Electron Devices Meeting 1992. Technical Digest, (1992),777-80	р.,	1			
Physics Letters, 70(10), (1997),1239-1241  MURARKA, S. P., et al., "Copper Interconnection Schemes: Elimination of The Need of Diffusion Barrier/Adhesion Promoter by the Use of Corrosion Resistant, Low Resistivity Doped Copper", SPIE, 2335, (1994),pp. 80-90  NAKAO, S., et al., "Thin and Low-Resistivity Tantalum Nitride Diffusion Barrier and Giant-Grain Copper Interconnects for Advanced ULSI Metallization", Japanese Journal of Applied Physics, 38(4B), (April 1999),pgs. 262-263  NAYAK, D.K., "High performance GeSi quantum-well PMOS on SIMOX", International Electron Devices Meeting 1992. Technical Digest, (1992),777-80	DIL		1999),1521-1523	++	
MURARKA, S. P., et al., "Copper Interconnection Schemes: Elimination of The Need of Diffusion Barrier/Adhesion Promoter by the Use of Corrosion Resistant, Low Resistivity Doped Copper", SPIE, 2335, (1994),pp. 80-90  NAKAO, S., et al., "Thin and Low-Resistivity Tantalum Nitride Diffusion Barrier and Giant-Grain Copper Interconnects for Advanced ULSI Metallization", Japanese Journal of Applied Physics, 38(4B), (April 1999),pgs. 262-263  NAYAK, D.K., "High performance GeSi quantum-well PMOS on SIMOX", International Electron Devices Meeting 1992. Technical Digest, (1992),777-80	N -1		MIYAKE, T., et al., "Atomic Hydrogen Enhanced Reflow of Copper", Applied		
Need of Diffusion Barrier/Adhesion Promoter by the Use of Corrosion Resistant, Low Resistivity Doped Copper", SPIE, 2335, (1994),pp. 80-90  NAKAO, S., et al., "Thin and Low-Resistivity Tantalum Nitride Diffusion Barrier and Giant-Grain Copper Interconnects for Advanced ULSI Metallization", Japanese Journal of Applied Physics, 38(4B), (April 1999),pgs. 262-263  NAYAK, D.K., "High performance GeSi quantum-well PMOS on SIMOX", International Electron Devices Meeting 1992. Technical Digest, (1992),777-80	BU		Physics Letters, 70(10), (1997),1239-1241	╀	
Low Resistivity Doped Copper", SPIE, 2335, (1994),pp. 80-90  NAKAO, S., et al., "Thin and Low-Resistivity Tantalum Nitride Diffusion Barrier and Giant-Grain Copper Interconnects for Advanced ULSI Metallization",  Japanese Journal of Applied Physics, 38(4B), (April 1999),pgs. 262-263  NAYAK, D.K., "High performance GeSi quantum-well PMOS on SIMOX", International Electron Devices Meeting 1992. Technical Digest, (1992),777-80			MURARKA, S. P., et al., "Copper Interconnection Schemes: Elimination of The		
NAKAO, S., et al., "Thin and Low-Resistivity Tantalum Nitride Diffusion Barrier and Giant-Grain Copper Interconnects for Advanced ULSI Metallization",  Japanese Journal of Applied Physics, 38(4B), (April 1999),pgs. 262-263  NAYAK, D.K., "High performance GeSi quantum-well PMOS on SIMOX", International Electron Devices Meeting 1992. Technical Digest, (1992),777-80	R		Need of Diffusion Barrier/Adhesion Promoter by the Use of Corrosion Resistant,		
and Giant-Grain Copper Interconnects for Advanced ULSI Metallization",  Japanese Journal of Applied Physics, 38(4B), (April 1999),pgs. 262-263  NAYAK, D.K., "High performance GeSi quantum-well PMOS on SIMOX", International Electron Devices Meeting 1992. Technical Digest, (1992),777-80	en		Low Resistivity Doped Copper <sup>a</sup> , SPIE, 2335, (1994),pp. 80-90	++	
Japanese Journal of Applied Physics, 38(4B), (April 1999),pgs. 262-263  NAYAK, D.K., "High performance GeSi quantum-well PMOS on SIMOX", International Electron Devices Meeting 1992. Technical Digest, (1992),777-80			NAKAO, S., et al., "Thin and Low-Resistivity Tantalum Nitride Diffusion Barrier		
NAYAK, D.K., "High performance GeSi quantum-well PMOS on SIMOX", International Electron Devices Meeting 1992. Technical Digest, (1992),777-80	به که		and Giant-Grain Copper Interconnects for Advanced ULSI Metallization",	1/	
International Electron Devices Meeting 1992. Technical Digest, (1992),777-80	151		Japanese Journal of Applied Physics, 38(4B), (April 1999),pgs. 262-263	+-+-	
BM International Electron Devices Meeting 1992. Technical Digest, (1992),777-80			NAYAK, D.K., "High performance GeSi quantum-well PMOS on SIMOX",	1 \	
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	First Named Inventor	Farrar, Paul			
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OTHER DOCUMENTS NON PATENT LITERATURE DOCUMENTS					
Examiner Cite Initials* No 1		include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	L		
	1	NEWBOE, B., et al., "Applied Materials Announces First Barrier/Seed Layer	11		
		System For Copper Interconnects", Applied Materials.	П	•	
BU		http://www.appliedmaterials.com/newsroom/pr-00103.html,(1997),pgs. 1-4	Ц		
0		OKAMOTO, Y., et al., "Magnetically Excited Plasma Oxynitridation of Si at			
BU		Room Temperature", Japanese Journal of Applied Physics, 34, (1995),L955-957	Н		
		PALLEAU, J., et al., "Refractory Metal Encapsulation in Copper Wiring",	Н		
		Advanced Metallization for Devices and Circuits-Science, Technology and	Ш		
i) 11		Manufacturability, Materials Research Society Symposium Proceedings, 337,	۱١		
BU	l	(April 1994),225 - 231			
		PARK, C. W., et al., "Activation Energy for Electromigration in Cu Films", Applied	1	1	
BU		Physics Letters, 59(2), (July 6, 1991),175-177	┞	<b> </b> _	
		RADZIMSKI, Z. J., et al., "Directional Copper Deposition using d-c Magnetron	1	[	
BU		Self-sputtering", J. Vac. Sci. Technol. B, 16(3), (1998),pp. 1102-1106	ऻ_	<u> </u>	
		RAMOS, T, et al., "Nanoporous Silica for Dielectric Constant Less Than 2",		1	
Dal	]	Conference Proceedings ULSI XII - 1997 Materials Research Society,		1	
BL		(1997),455-461	├	⊢	
		RATH, J. K., et al., "Low-Temperature deposition of polycrystalline silicon thin	1		
		films by hot-wire CVD", Solar Energy Materials and Solar Cells, 48, (1997),pp.	1		
BU		269-277	<u> </u>	┡	
		RAY, S. K., et al., "Flourine-enhanced nitridation of silicon at low temperatures in	l		
BL		a microwave plasma", J. Appl. Phys., 70(3), (1991),pp. 1874-1876	⊢	├	
<b>4</b> ,	1	ROSSNAGEL, S. M., "Magnetron Sputter Deposition of Interconnect	1		
BU_		Applications", Conference Proceedings, ULSI XI, (1996),227-232	╄	╄	
	1 1	ROSSNAGEL, S. M., et al., "Metal ion deposition from ionized mangetron	l		
BU		sputtering discharge", J. Vac. Sci. Technol. B, 12(1), (1994),pp. 449-453	├-	_	
		RYAN, J. G., "Copper Interconnects for Advanced Logic and DRAM", Extended	ı		
K al		Abstracts of the 1998 International Conference on Solid-State Devices and		1	
BK		Materials, Hiroshima,(1998),pp. 258-259	┼	├	
64 /		RYU, CHANGSUP, "Barriers for Copper Interconnections", Solid State		1	
BU		Technology, 42(4), (April 1999),pages 1-3	┼-	-	
0-1	1   •	RYU, C., et al., "Barriers for copper interconnections", Solid State Technology.		ł	
BN		(April 1999),pp. 53,54,56	1	<del> </del>	
a		SAARIVIRTA, M. J., "High Conductivity Copper Rich Cu-Zr Alloys",		ĺ	
BU		Transactions of the Metallurgical Society of AIME, 218, (1960),431-437	$\vdash$	├—	
		SENZAKI, Y., "Chemical Vapor Deposition of Copper using a New Liquid		}	
BL		Precursor with Improved Thermal Stability", Conference Proceedings ULSI XIII,			
BL	<b> </b>	Materials Research Society, (1998),pp. 451-455	╀	<del> </del>	
		SHACHAM-DIAMAND, Y., "100 nm Wide Copper Lines Made by Selective		[	
	1 \	Electroless Deposition", Journal of Micromechanics and Microengineering, 1,		1	
Ble	\	(March 1991),66-72	1		
10.0	1		ل	Ь—	

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	First Named Inventor	Farrar, Paul	
	Group Art Unit	2818	
	Examiner Name	Unknown	
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Examiner Initials*	No 1	(book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	
	(	SHACHAM-DIAMAND, YOSI, et al., "Copper electroless deposition technology	
_	1	for ultra-large-scale-intergration (ULSI) metallization", Microelectronic	
BR	1	Engineering, NL, Vol. 33, No. 1, XP004054497, (1997),47-58	L
		SRIVATSA, A. R., et al., "Jet Vapor Deposition: an Alternative to	1
Box		Electrodeposition", Surface Engineering, 11, (1995),75-77	Ш
		STROUD, P. T., et al., "Preferential deposition of silver induced by low energy	
.		gold ion implantation", Thin Solid Films, Switzerland, Vol. 9, No. 2,	1
BU	- 1	XP000993098, (Feb. 1972),273-281	L
		TAO, J., et al., "Electromigration Characteristics of Copper Interconnects", IEEE	1
Bu	.	Electron Devices Letters, 14(5), (May 1993),249-251	
101		TING, C. H., "Methods and Needs for Low K Material Research", Materials	1
	1	Research Society Symposium Proceedings, Volume 381, Low-Dielectric	l
		Constant Materials - Synthesis and Applications in Microelectronics, Lu, T.M., et	
BX		al., (eds.), San Francisco, CA,(April 17-19, 1995),3-17	L
		TSUKADA, T., et al., "Adhesion of copper films on ABS polymers deposited in	
	ŀ	an internal magnet magnetron sputtering system", J. Vac. Sci. Technol., 16(2).	1
BIL		(1979),348-351	<u> </u>
7		VAN VLACK, LAWRENCE H., "Elements of Materials Science", Addison-	1
BU		Wesley Publishing Co., Inc. Reading, MA, (1959),468	<u> </u>
12/3		VENKATESAN, S., et al., "A High Performance 1.8V, 0.20 micrometer CMOS	İ
		Technology with Copper Metalization", Electron Devices Meeting, 1997.	ļ
BR		Technical Digest., International, (December 7-10, 1997),769-772	
		VOSSEN, J. L., et al., Thin Film Processes II, Academic Press, Inc.,(1991),1-	ŀ
BI		866	L
75.		WANG, X. W., et al., "Highly Reliable Silicon Nitride Thin Films Made by Jet	ı
		Vapor Deposition", Japanese Journal of Applied Physics, Vol. 34, Part1, No. 2B.	
Br		(February 1995),955-958	┖
		WANG, K., et al., "Very Low Temperature Deposition of Polycrystalline Silicon	
n		Films with Micro-Meter-Order Grains on SiO2", Mat. Res. Soc. Symp. Proc., 355,	
Bu		(1995),pp. 581-586	L
		WINTERS, H. F., et al., "Influence of Surface Absorption Characteristics on	
		Reactivity Sputtered Films Grown in the Biased and Unbiased Modes", J. Appl.	
BU		Phys., 43(3), (1972),pp. 794-799	L
		WOLF, S., et al., Silicon Processing for the VLSI Era, Vol. 1 - Process	
BM		Technology, Lattice Press, Sunset Beach, CA,(1986),514-538	
<u> </u>		YEH, J. L., et al., "Selective Copper plating of Polysilicon Surface	
		Micromachined Structures", Solid-State Sensor and Actuator Workshop,	1
		(1998),pp. 248-251	
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(Use as many sheets as necessary)	Filing Date	August 5, 2003
	First Named Inventor	Farrar, Paul
	Group Art Unit	2818- 2823
	Examiner Name	Unknown B. KEBEDE
Sheet 12 of 12	Attorney Docket No: 1303.110US1	

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	BIL	1	ZHANG, J., et al., "Investigations of photo-induced decomposition of palladium acetate for electroless copper plating", Thin Solid Films, 318, (1998),pp. 234-238		

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